



Galileo Terrestrial Reference Frame realization and beyond: the GGSP project

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The GGSP prototype, a project funded by the 6th framework programme of the European Union and managed by the European GNSS Supervisory Authority (GSA), will be finished end of May this year. The main task of the GGSP prototype was the definition, realization and maintenance of the Galileo Terrestrial Reference Frame (GTRF) with the requirement to align the GTRF to the International Terrestrial Reference Frame (ITRF) within 3 cm (2 sigma) accuracy. With regard to the non-availability of Galileo signals in space the initialization and maintenance of the GTRF were realized with GPS observations only. Moreover, the GGSP prototype carried out orbit, clock and coordinate parameter estimation on a weekly basis, using a processing strategy known from the International GNSS Service (IGS).

Beyond these activities, the consortium has been analysing the Galileo signals as transmitted by the two GIOVE spacecrafts. Since April 2008 the second test satellite GIOVE-B is in orbit while the first one, GIOVE-A, is transmitting the first Galileo signals for over three years now. A special feature of GIOVE-B is the onboard passive hydrogen maser (PHM). Known from terrestrial reference station, hydrogen masers are providing the highest short-term stability. It is expected that the PHM onboard GIOVE-B will show similar clock stability as terrestrial hydrogen masers. Using different sampling rates, the performance of the GIOVE-B onboard clock could be tested for different time intervals. We will use comparisons with onboard clocks of other GNSS as well as with clocks of terrestrial reference stations to illustrate the GIOVE-B clock behaviour. Moreover, some results of intersystem biases, between GPS and Galileo/GIOVE, will be presented.